

REMARKS/ARGUMENTS

In the Office Action of April 8, 2009, claims 1-18 are rejected and the drawings are objected to. In response, claims 1 and 8 have been amended, claims 2 and 9 have been canceled and new claims 19 and 20 have been added. Applicants hereby request reconsideration of the application in view of the claim amendments and the below-provided remarks.

Objections to the Drawings

The drawings are objected to. In particular, the Office Action states that Figures 1-4 should be labeled as "Prior Art." The current application is a U.S. National Stage application. The drawing requirements for U.S. National Stage applications are identified in MPEP 1825 and labeling of figures as "Prior Art" is not required (see PCT Rule 11.11). Further, MPEP 1893.03(f) states that "[t]he USPTO may not impose requirements beyond those imposed by the Patent Cooperation Treaty (e.g., PCT Rule 11)." In view of the above, Applicants respectfully assert that labeling Figures 1-4 as "Prior Art" is not required in the current application. Thus, Applicants respectfully request that the objections to the drawings be withdrawn.

Claim Rejections under 35 U.S.C. 102 and 35 U.S.C. 103

Claims 1, 2, 7-9, 14, 17 and 18 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Calderbank et al. (U.S. Pat. No. 6,115,427, hereinafter "Calderbank"). Claims 3-5 and 10-12 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Calderbank in view of Cudak et al. (U.S. Pat. Pub. No. 2005/0289256 A1, hereinafter "Cudak"). Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Calderbank in view of Kwan et al. (U.S. Pat. Pub. No. 2003/0081692 A1, hereinafter "Kwan"). Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Calderbank in view of Currivan et al. (U.S. Pat. Pub. No. 2005/0141460 A9, hereinafter "Currivan"). Applicants respectfully submit that the pending claims are patentable over the cited references for the reasons provided below.

Independent Claim 1

Claim 1 has been amended to include the limitation “*the pre-coding of at least the first signal comprises a rotation of the first modulation constellation through a first angle*” of claim 2. As a result, claim 2 has been canceled.

Applicants respectfully assert that Calderbank does not disclose that “*the pre-coding of at least the first signal comprises a rotation of the first modulation constellation through a first angle*” (emphasis added). As a result, Applicants respectfully assert that amended claim 1 is not anticipated by Calderbank and is now in condition for allowance.

In particular, Calderbank discloses that constellation mappers (108a) and (108b) receive a codeword from an encoder (106) and produce complex valued outputs. (See Fig. 3 and column 7, lines 17-32). Calderbank further discloses that conventional square-root Nyquist transmit filters (112a) and (112b) pulse shape the complex valued outputs and the pulse shaped outputs are modulated by modulators (114a) and (114b) and transmitted using antennas (116a) and (116b). (See Fig. 3 and column 7, lines 33-42). That is, Calderbank discloses that complex valued outputs produced by the constellation mappers (108a) and (108b) are pulse shaped, modulated and transmitted. However, Calderbank does not disclose rotating a modulation constellation through an angle. Thus, Applicants respectfully assert that Calderbank does not disclose that “*the pre-coding of at least the first signal comprises a rotation of the first modulation constellation through a first angle*” (emphasis added), as recited in claim 1. As such, Applicants respectfully assert that amended claim 1 is not anticipated by Calderbank

Dependent Claims 3-7 and 15-18

Claims 3-7 and 15-18 depend from and incorporate all of the limitations of independent claim 1. Thus, Applicants respectfully assert that claims 3-7 and 15-18 are allowable at least based on an allowable claim 1. Additionally, claim 4 is allowable for further reasons, as described below.

Claim 4 recites in part that “*the pre-coding further comprises a change of the number of simultaneously transmitted signals*” (emphasis added), which is not disclosed by Calderbank. In particular, Calderbank discloses that two signals are transmitted

simultaneously. (See column 2, lines 17-19, Fig. 3 and column 7, lines 17-42). Calderbank does not disclose changing the number of simultaneously transmitted signals from two to a different number. Thus, Applicants respectfully assert that Calderbank does not disclose the above-identified limitation of claim 4.

Independent Claim 8

Claim 8 has been amended to include the limitation of claim 9. As a result, claim 9 has been canceled. As amended, claim 8 includes similar limitations to amended claim 1. Because of the similarities between amended claim 1 and amended claim 8, Applicants respectfully assert that the remarks provided above with regard to amended claim 1 apply also to amended claim 8. Thus, Applicants respectfully assert that claim 8 is not anticipated by Calderbank and is now in condition for allowance.

Dependent Claims 10-14

Claims 10-14 depend from and incorporate all of the limitations of independent claim 8. Thus, Applicants respectfully assert that claims 10-14 are allowable at least based on an allowable claim 8. Additionally, claim 11 include a similar limitation to claim 4. Because of the similarity between claim 11 and claim 4, Applicants respectfully assert that the remarks provided above with regard to claim 4 apply also to claim 11.

New Claims 19 and 20

Claims 19 and 20 have been added. Support for claim 19 is found in Applicants' specification at, for example, page 2, lines 4-16. Support for claim 20 is found in Applicants' specification at, for example, page 2, lines 4-16. Claim 19 depends from and incorporates all of the limitations of independent claim 1. Thus, Applicants respectfully assert that claim 19 is allowable at least based on an allowable claim 1. Claim 20 depends from and incorporates all of the limitations of independent claim 8. Thus, Applicants respectfully assert that claim 20 is allowable at least based on an allowable claim 8.

Additionally, claim 19 recites that *"the first transmitted signal is orthogonal to the second transmitted signal and the orthogonality between the first transmitted signal*

and the second transmitted signal is not provided by communication channels” and claim 20 recites that *“the first received signal is orthogonal to the second received signal and the orthogonality between the first received signal and the second received signal is not provided by communication channels,”* which are not disclosed in any of the cited references. Thus, Applicants respectfully assert that claims 19 and 20 are patentable over the cited references and are now in condition for allowance.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,
Mattheijssen et al.

Date: May 15, 2009

By: /thomas h. ham/
Thomas H. Ham
Reg. No. 43,654

Wilson & Ham
PMB: 348
2530 Berryessa Road
San Jose, CA 95132
Phone: (925) 249-1300
Fax: (925) 249-0111